

**Amendments to the Claims:**

The listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claims 1-20 (Canceled)

21. (Currently Amended) A method for authenticating and tracking one or more instantiations of a product following initial distribution comprising:

providing a code string model having finite parameters, the finite parameters used to define a total quantity of unique code strings that can be derived from the code string model;

~~providing a subset of unique code strings as~~ defining a quantity of unique code strings selected for use from the total quantity of unique code strings, the ~~subset~~ quantity of unique code strings being at least one hundred times smaller than the total quantity of unique code strings;

defining a ~~maximum~~ desired probability of guessing any of the ~~subset~~ quantity of unique code strings;

~~verifying that~~ calculating, based on the code string model and the defined quantity of unique code strings, an actual probability of guessing any of the ~~subset~~ quantity of unique code strings is ~~less than the maximum probability of~~ guessing any of the subset of unique code strings;

randomly generating ~~the~~ a subset of unique code strings from the total quantity of unique code strings when the actual probability is less than the

desired probability, wherein a size of the subset of unique code strings corresponds to the quantity of unique code strings;

defining a new code string model having finite parameters when the actual probability is greater than the desired probability;

associating attributes to one or more of the subset of unique code strings, the attributes defining characteristics regarding the instantiations to which the one or more of the subset of unique code strings will be marked on or affixed to;

providing a secure server having a database used to store the subset of unique code strings;

storing the subset of unique code strings within the database on the secure server;

marking each of a quantity of the instantiations with one of the code strings of the subset;

distributing the marked instantiations along a chain of commerce; and

validating the authenticity of one of the marked instantiations during distribution, the marked instantiation validated through exchange of transmitted signals between the secure server and a communication device,

wherein the communication device receives an entry of the unique code string and transmits an inquiry signal containing the unique code string to the secure server, and

wherein the secure server receives the inquiry signal to reveal the scanned unique code string, searches the database thereon to validate the authenticity of

the unique code string, and transmits a return signal to the field reader regarding validation of the authenticity of the marked instantiation.

22. (Original) The method of claim 21, wherein the storing step further includes storing the attributes assigned to the unique code strings within the database of the secure server.

23. (Original) The method of claim 22, wherein the validating authenticity step further includes searching the database for the attributes in order to determine tracking parameters of the marked instantiations.

24. (Previously Presented) The method of claim 22, wherein the validating authenticity step further includes storing current location information of the marked instantiations when the tracking parameters are determined to be valid.

25. (Original) The method of claim 21, wherein the marking instantiations step comprises marking each unique code string of the subset on a corresponding label.

26. (Original) The method of claim 25, wherein the marking instantiations step comprises affixing the marked labels to corresponding instantiations.

27. (Original) The method of claim 21, wherein the marking instantiations step comprises using the process of watermarking.

28. (Original) The method of claim 27, wherein the watermarking process comprises digital watermarking, and wherein the unique code strings of the subset are each embedded in a corresponding label.

29. (Original) The method of claim 28, wherein a deciphering step is performed to identify each of the embedded unique code strings of the subset before the unique codes strings of the subset can be authenticated.

30. (Original) The method of claim 21, wherein the authenticity validation step further includes using a schema for the exchange of transmitted signals between the secure server and the communication device, and wherein the schema is an industry standard.

31. (Original) The method of claim 30, wherein the schema is of an XML format.

Claims 32-57 (Canceled)

58. (New) The method of claim 21, wherein the new code string model is defined with a different code string character length or a different number of code string character types from the provided code string model.

59. (New) A method for authenticating and tracking one or more instantiations of a product following initial distribution comprising:

providing a code string model having finite parameters, the finite parameters used to define a total quantity of unique code strings  $N^D$  that can be derived from the code string model, wherein  $N$  is a number of code string character types and  $D$  is a code string length;

defining a quantity of unique code strings  $B$  selected for use from the total quantity of unique code strings  $N^D$ ;

defining a desired probability  $X$  of guessing any of the quantity of unique code strings;

calculating, based on the code string model and the defined quantity of unique code strings  $B$ , an actual probability  $P$  of guessing any of the defined quantity of unique code strings  $B$ , wherein the calculation of the actual probability  $P$  is based on the equation  $P = B/(N^D)$ ;

randomly generating a subset of unique code strings from the total quantity of unique code strings  $N^D$  when the actual probability  $P$  is less than the desired probability  $X$ , wherein a size of the subset of unique code strings corresponds to the defined quantity of unique code strings  $B$ ;

defining a new code string model having finite parameters when the actual probability  $P$  is greater than the desired probability  $X$ ;

associating attributes to one or more of the subset of unique code strings, the attributes defining characteristics regarding the instantiations to which the one or more of the subset of unique code strings will be marked on or affixed to;

storing the subset of unique code strings within a database on a secure server; and

distributing marked instantiations along a chain of commerce,

wherein the authenticity of one of the marked instantiations is validated during distribution through exchange of transmitted signals between the secure server and a communication device,

wherein the communication device receives an entry of the unique code string and transmits an inquiry signal containing the unique code string to the secure server, and

wherein the secure server receives the inquiry signal to reveal the scanned unique code string, searches the database thereon to validate the authenticity of the unique code string, and transmits a return signal to the field reader regarding validation of the authenticity of the marked instantiation.

60. (New) The method of claim 59, wherein the storing step further includes storing the attributes assigned to the unique code strings within the database of the secure server.

61. (New) The method of claim 60, wherein the validating authenticity step further includes searching the database for the attributes in order to determine tracking parameters of the marked instantiations.

62. (New) The method of claim 60, wherein the validating authenticity step further includes storing current location information of the marked instantiations when the tracking parameters are determined to be valid.

63. (New) The method of claim 59, wherein the marking instantiations step comprises marking each unique code string of the subset on a corresponding label.

64. (New) The method of claim 63, wherein the marking instantiations step comprises affixing the marked labels to corresponding instantiations.

65. (New) The method of claim 59, wherein the marking instantiations step comprises using the process of watermarking.

66. (New) The method of claim 65, wherein the watermarking process comprises digital watermarking, and wherein the unique code strings of the subset are each embedded in a corresponding label.

67. (New) The method of claim 66, wherein a deciphering step is performed to identify each of the embedded unique code strings of the subset before the unique codes strings of the subset can be authenticated.

68. (New) The method of claim 59, wherein the authenticity validation step further includes using a schema for the exchange of transmitted signals between the secure server and the communication device, and wherein the schema is an industry standard.

69. (New) The method of claim 68, wherein the schema is of an XML format.

70. (New) The method of claim 59, wherein the new code string model is defined with a different code string character length or a different number of code string character types from the provided code string model.

71. (New) A method for authenticating and tracking one or more instantiations of a product following initial distribution comprising:

providing a code string model having finite parameters, the finite parameters used to define a total quantity of unique code strings  $N^D$  that can be derived from the code string model, wherein  $N$  is a number of code string character types and  $D$  is a code string length;

defining a quantity of unique code strings  $B$  selected for use from the total quantity of unique code strings  $N^D$ ;

defining a desired probability  $X$  of guessing any of the quantity of unique code strings;



calculating, based on the code string model and the defined quantity of unique code strings  $B$ , an actual probability  $P$  of guessing any of the defined quantity of unique code strings  $B$ , wherein the calculation of the actual probability  $P$  is based on the equation  $P = B/(N^D)$ ;

randomly generating a subset of unique code strings from the total quantity of unique code strings  $N^D$  when the actual probability  $P$  is less than the desired probability  $X$ , wherein a size of the subset of unique code strings corresponds to the defined quantity of unique code strings  $B$ ;

defining a new code string model having finite parameters when the actual probability  $P$  is greater than the desired probability  $X$  by adjusting the number of code string character types  $N$  or the code string length  $D$  so that an actual probability  $P$  of guessing any of the quantity of unique code strings  $B$  is less than the desired probability  $X$ ;

associating attributes to one or more of the subset of unique code strings, the attributes defining characteristics regarding the instantiations to which the one or more of the subset of unique code strings will be marked on or affixed to;

wherein the authenticity of a marked instantiations is validated during distribution along a chain of commerce through exchange of transmitted signals between a secure server that stores the subset of unique code strings and a communication device,

wherein the communication device receives an entry of the unique code string and transmits an inquiry signal containing the unique code string to the secure server, and

wherein the secure server receives the inquiry signal to reveal the scanned unique code string, searches the database thereon to validate the authenticity of the unique code string, and transmits a return signal to the field reader regarding validation of the authenticity of the marked instantiation.

72. (New) The method of claim 71, wherein the storing step further includes storing the attributes assigned to the unique code strings within the database of the secure server.

73. (New) The method of claim 72, wherein the validating authenticity step further includes searching the database for the attributes in order to determine tracking parameters of the marked instantiations.

74. (Previously Presented) The method of claim 72, wherein the validating authenticity step further includes storing current location information of the marked instantiations when the tracking parameters are determined to be valid.

75. (New) The method of claim 71, wherein the marking instantiations step comprises marking each unique code string of the subset on a corresponding label.

76. (New) The method of claim 75, wherein the marking instantiations step comprises affixing the marked labels to corresponding instantiations.

77. (New) The method of claim 71, wherein the marking instantiations step comprises using the process of watermarking.

78. (New) The method of claim 77, wherein the watermarking process comprises digital watermarking, and wherein the unique code strings of the subset are each embedded in a corresponding label.

79. (New) The method of claim 78, wherein a deciphering step is performed to identify each of the embedded unique code strings of the subset before the unique codes strings of the subset can be authenticated.

80. (New) The method of claim 71, wherein the authenticity validation step further includes using a schema for the exchange of transmitted signals between the secure server and the communication device, and wherein the schema is an industry standard.

81. (New) The method of claim 68, wherein the schema is of an XML format.